REMARKS/ARGUMENTS

This paper is submitted in response to the office action mailed July 20, 2004. Reconsideration is respectfully requested.

Claims 1-45 were examined, and all stand rejected. Claims 1-11, 14-25 28-45 were rejected under 35 U.S.C. §102(b) as anticipated by US 4,994,069 – Ritchart et al. Claims 1-45 were rejected under 35 U.S.C. §102(b) as anticipated by US 5,800,454 – Jacobsen et al. Claims 1-7, 9, 10, 20-23, and 31-33 were rejected on the grounds of obviousness-type double patenting, as unpatentable over the claims of US 6,605,101.

By this amendment, claims 1-4, 9-17, 19, 32-34, and 39-41 have been amended, and claims 5-8, 18, 35-38, and 42-45 have been canceled. Thus, claims 1-4, 9-17, 19-34, and 39-41 remain in prosecution.

The rejection of claims 1-4, 9, 10, 20-23, and 31-33 on the grounds of obviousness-type double patenting is overcome by the terminal disclaimer submitted herewith.

Claims 1-4, 9-17, 19, 32-34, and 39-41 have been amended to define the vaso-occlusive device of the invention as having "a minimum energy state secondary configuration comprising a plurality of interconnected, substantially closed loops...." Claims 20-31, as filed, recite essentially the same limitation. It is respectfully submitted that the cited references, taken singly or in combination, neither teach nor suggest a vaso-occlusive device having the configuration now defined in all of the pending claims.

In the office action, Fig. 3B of Jacobsen et al was cited as disclosing the device of applicant's claimed invention, and Fig. 1A (with the accompanying description) was cited for disclosing applicant's claimed method. Figure 2C of Ritchart et al. was cited as disclosing a vaso-occlusive device as defined in claims 1-4, 9, 10, 14-17, 19-25, 28-34, and 39-41. Applicant respectfully submits that the claims, as amended, define patentably over these references.

As noted above, all of the claims now define the device as comprising a plurality of interconnected, substantially closed loops when in its minimum energy state secondary configuration. This novel configuration provides the unique advantages of the invention as described in the specification.

The device disclosed in Ritchart et al., by contrast, is described as "helical." See, e.g., column 4, line 65 to column 5, line 21. Prior to forming the "irregularities" that create the configuration shown in Fig. 2C, the Ritchart et al. device thus has the configuration shown in Fig. 2B, which is a helix, the windings of which, by definition, inherently do not form closed loops. The configuration of Fig. 2C is formed by creating the "irregularities" shown in Fig. 2C, but these irregularities do not result in the closure of the helical windings. The device is still in the configuration of a helix, with open windings, not closed loops.

Thus, Ritchart et al. does not teach or suggest a vaso-occlusive device having a minimum energy configuration comprising a plurality of interconnected, substantially closed loops. Nor is there anything in this reference, or in any other reference of record, to suggest that the Ritchart et al. device may be modified in such a way as to give it a minimum energy state secondary configuration comprising a plurality of interconnected, substantially closed loops.

The device disclosed in Jacobsen et al. likewise is an open-coiled helix, which does not comprise a plurality of interconnected, substantially closed loops, as defined in all of the pending claims. Specifically, the embodiment of Fig. 3B is defined as a coil having "a generally cylindrical portion 4a and a tapered portion 4b, similar to that shown in Fig. 1A." Figures 1A and 1B clearly disclose the Jacobsen et al. device as an open-coiled helix. As with Ritchart et al., nothing in the art suggests that the Jacobsen et al. device may be modified so as to have a minimum energy state secondary configuration comprising a plurality of interconnected, substantially closed loops.

Thus, all of the pending claims, as amended, now define the vaso-occlusive device of the invention as having a minimum energy state secondary configuration comprising a plurality of interconnected, substantially closed loops. Nothing in the cited art, taken singly or in combination, teaches or suggests a vaso-occlusive device having such a configuration. It is respectfully submitted that all of the claims now define patentably over the cited references, taken singly, or in any combination that may fairly suggest itself to those of ordinary skill in the pertinent arts.

Many of the dependent claims define further novel aspects of the invention that are nowhere shown or suggested in the cited references. For example, claims 4 and 22 define the substantially closed loops as defining multiple discrete axes, wherein each adjacent pair of axes forms an acute angle. Claims 9 and 23 define the loops as being arranged tangentially to each other. Claims 10 and 24 define at least one loop as overlapping an adjacent loop. Claims 11 and 25 define each loop as defining an axis that is orthogonal to a unique radius of a circle, wherein the radii are separated by a fixed angle of arc. Claims 13 and 27 define the device as comprising a plurality of loops of progressively decreasing diameter from a largest loop to a first smallest loop, with a second smallest loop immediately adjacent the largest loop. Claims 14 and 28 define the device as having at least one dimension that is at least 25% greater than the maximum dimension of the vascular site. Claims 16 and 30 define the device as having a length, in its secondary configuration, that is at least twice the maximum dimension of the vascular site. Claim 19 defines the device as having a minimum energy state configuration that subtends a first angle of arc of more than about 30 degrees, wherein each adjacent pair of loops defines a second angle of arc between them that is less than about half the first angle of arc. The remaining dependent claims define the novel aspects of the invention with greater particularity.

It is therefore respectfully submitted that independent claims 1, 20, 32, and 39, as amended, in defining the device as comprising a plurality of interconnected, substantially closed loops, define patentably over the cited prior art, and should therefore be allowed. Claims 2-4, 9-17, 19, 21-31, 33, 34, 40, and 41 should likewise be allowed, either because they depend from allowable claims, or because they recite further limitations that are nowhere taught or suggested by the art of record.

Applicant notes that Supplementary Information Disclosure Statements were filed on April 12, 2002; March 13, 2003; and March 22, 2004. Copies of the Supplementary Information Disclosure Statements are submitted herewith, along with copies of the postcard receipts. Applicant respectfully requests that the references cited in these Supplementary Information Disclosure Statements be made of record.

In summary, it is respectfully submitted that claims 1-4, 9-17, 19-34, and 39-41 define patentably over the art of record and should be allowed. Passage of the application to issue is therefore respectfully requested.

Respectfully submitted,

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